AB32: The California Global Warming Solutions Act

Proposed Mandatory Commercial Recycling Regulation Informal Stakeholder Feedback Workshop

CalRecycle

California Environmental Protection Agency

Air Resources Board

September 21, 2010

Meeting Agenda

- Welcome/Introduction
- Presentation of Cost Model for Economic Evaluation of Proposed Regulation
- Supplemental Economic Analysis
- Local Government Cost Survey
- Recycling & Composting GHG Emission Reduction Factors
- Environmental Impacts Analysis
- Open Discussion & Questions

Mandatory Commercial Recycling

- Presentation of Cost Model for Economic Evaluation of Proposed Regulation

Supplemental Economic Issues

Additional issues to be discussed in the Staff Report

- Phased-in costs toward full implementation in 2020
- Examples of costs to selected businesses
- Rural vs. Urban costs and diversion tons
- Multi-family housing data

Implementation Profile

- Adjust cost estimates in Draft Report (showed full implementation in 2012)
- Assume full Implementation in 2020; phased-in over 9 years

Implementation Costs (millions, $ 2010): Baseline, Full Implementation, and Phased-In

		Increase Over Baseline, Million $		
	Statewide Disposal Cost - Baseline Million $	HF&H Cost (Full Implementation 2012)	Phased-In Cost (Full Implementation 2020)	Annual Rate of Phase-In
2012	$2,294.5	$177.0	$19.7	11%
2014	$2,384.6	$183.7	$61.2	33%
2016	$2,467.1	$193.1	$107.3	56%
2018	$2,561.2	$201.7	$156.9	78%
2020	$2,657.3	$210.6	$210.6	100%

Estimated Number of Businesses Affected by the Regulation

- EDD reports 1.34 million business establishments in California, 2008 Q3
- LMID reports the businesses by 9 size categories, by NAICS code
- 70% of this number have 4 or fewer employees
- Currently evaluating correlation between business type, number of employees, and waste generated
- Further analysis is needed to determine a more precise number of businesses affected by the regulation

Example Firm Costs
Annual Cost Increase (in $ 2008)

Business Cost for Full Implementation in 2020

	Number of Employees/Units	Full Cost in 2020
Retail Store	80 employees	$2,300 - $5,600
Multi – Family Housing	75-unit complex	$580 - $1,400
Sit Down Restaurant	20 employees	$460 - $1,160
Businesses Services	10 employees	$160 - $390

Rural Share of Totals: Annual Tons Generated and Annual Cost

- 28 Rural Counties generate 3.9% of annual statewide disposal
- Rural Counties incur 7.2% of total statewide cost to collect and transport waste to landfills
- Costs differentials vary by type of waste
- Collection costs and transportation costs are responsible for the higher cost

Multi-Unit Housing Affected by the Regulation

- California has 13.3 million housing units (single residential & multi-family housing)
- 28.2% of these housing units are in Multi-family complexes of 3+
- 22.5% of these housing units are in Multi-family complexes of 5+
- There are approximately 128,000 apartment complexes with 8+, and 75,000 with 10+ units

Multi-Unit Housing Sites Affected by the Regulation

- Need to develop correlation between waste generation amounts for various size apartment complexes
- The number of individual housing sites has not yet been determined
- ACS reports the housing in a number range, so a “threshold” level must be calculated

Rural Multi-Unit Housing Data

- The proportion of multi-unit housing in rural areas is approximately equal to the number in urban areas
- The percentage of smaller complexes (5-9 units) located in rural counties is proportional to the population share
- There are 30% fewer apartment complexes with >16 units in rural counties vs. urban

Supplemental Economic Issues

Questions ?

Cost to Local Jurisdictions

Estimated cost to implement mandatory commercial recycling education, outreach and monitoring

Local Jurisdiction Costs

Proposed Regulation Requirements

- Education
- Outreach
- Direct Contact/Monitoring

Analysis

- Limited Data
- Jurisdiction Size
  - Large -- pop ≥ 200,000 (27 jurisdictions & 41% of statewide population)
  - Medium -- pop < 200,000 pop ≥ 35,000 (232 jurisdictions & 49% of statewide population)
  - Small -- pop < 35,000 (278 jurisdictions & 10% of statewide population)

Survey Findings
Web Resources

Jurisdiction Size	Content Complexity Range
Small	• 1-2 pages on general solid waste for all sectors to link to service provider, rates, etc.
Medium	• 1-3 pages on general waste management to program requirements, links to brochure, Q&A, forms, etc.
Large	• 1-4 + pages direct contact to multiple pages by sector (food/beverage, hospitality, other) or program (recycling, composting) with corresponding toolkit, brochure, fact sheet, etc.

Web Page Costs (Start-up)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	$300	$600
medium	negligible	<$500	$5,000
large	<$150	$2,000	$4,250

Web Page Costs (Annual Maintenance)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	negligible	negligible
medium	negligible	$200	$1,500
large	negligible	$1,000	$1,000

Survey Findings
Printed Materials

- Annual costs can be higher than start-up
- Cost variation
- Open market systems may require more planning/development resources

Printed Materials Costs (Start-up)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	$1,000	$10,000
medium	negligible	$3,000	$20,000
large	$2,000	$3,750	$5,000

Printed Materials Costs (Annual)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	NA	$10,000
medium	negligible	$3,000	$10,000
large	$2,000	$4,000	$10,000

Survey Findings
Direct Contact/Monitoring

- Direct contact
- Monitoring
  - Difficult to separate the costs
  - Combined the two activities

Direct Contact/Monitoring Costs (Start-up)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	<$1050	$9,500
medium	negligible	$7,000	$50,000
large	negligible	$17,000	$100,000-400,000

Direct Contact/Monitoring Costs (Annual)

Jurisdiction Size	Low End	Mid Range	High End
small	negligible	$1,000	9,500
medium	negligible	$5,000	$25,000
large	negligible	$10,000	$100,000 -400,000

Feedback

- Please provide comments on the reasonableness of this approach and these findings
  - Any supporting cost data is appreciated

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Greenhouse Gas Emission Reduction Factors

- Two types:
  - Recycling emission reduction factor (RERF)
  - Compost emission reduction factor (CERF)
- Converts the amount of recycled material to greenhouse gas emission reductions
- Employs a lifecycle method to calculate reductions (i.e. additional emissions and reductions)
- Accounts for recycling benefits, but does not consider other end-of-life options (e.g. landfill, combustion)

Recycling Emission Reduction Factors (RERF)

- Applies to: metals, glass, plastic, wood-based organics
- Individual factors for each material (reduced emissions per ton of recycled material)
- Factor is based upon:
    - Manufacturing stage emissions (virgin vs. recycled)
    - Forest carbon sequestration (wood-based materials)
    - Post consumer transportation (all materials)
    - Recycling efficiency (all materials)
- Assumes closed loop recycling systems (except for lumber)
- Sensitivity analysis used to evaluate variable uncertainties

RERF Summary

Material	RERF*
Aluminum	12.9
Steel	1.5
Glass	0.2
HDPE	0.8
PET	1.4
Corrugated cardboard	5.0
Magazines/3rd class mail	0.3
Newspaper	3.4
Office paper	4.3
Telephone books	2.7
Dimensional lumber	0.21
Mixed plastic	1.2

*metric tons of CO_2E reduced per ton of material

Compost Emission Reduction Factor (CERF)

- Applies to compost from: food scraps, grass, leaves, branches, organic municipal solid waste, and yard trimmings
- Assesses the emission reductions from compost application and emissions from composting process

Emission reductions:

- Soil carbon storage
- Reduced fertilizer use
- Reduced erosion
- Reduced water use
- Reduced herbicide use

Emissions:

- Process
- Transportation
- Fugitive

CERF Summary

Below is a summary of the average emission reductions/emissions value used for each variable:

Emission reductions:

- Soil carbon storage: 0.26 $MTCO_2E$/ton of feedstock
- Reduced fertilizer use: 0.13 $MTCO_2E$/ton of feedstock
- Reduced erosion: 0.13 $MTCO_2E$/ton of feedstock
- Reduced water use: 0.02 $MTCO_2E$/ton of feedstock
- Reduced herbicide use: ~0

Emissions:

- Process: -0.008 $MTCO_2E$/ton of feedstock
- Transportation: -0.008 $MTCO_2E$/ton of feedstock
- Fugitive: -0.103 $MTCO_2E$/ton of feedstock

CERF = 0.42 $MTCO_2E$/ton of feedstock

For More Information…

- See Appendices for more technical details (http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=248&aiid=248)
- Supplemental Spreadsheet will provide the detailed data inputs used to calculate each RERF (http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=248&aiid=248)
- ARB emission factor contacts

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Environmental Impacts

- Environmental Impact Analysis will be included in ISOR (Staff Report)
- Address negative and beneficial impacts
  - Landfill gas generation
  - Mineral extraction
  - Composting and compost use
  - Transportation
  - Environmental Justice

Landfill Gas Generation

- ~3 million tons per year diverted from landfills and recycled
- Results in ~36,500 tons per year reduction in CH_4 emissions (700,000 $MTCO_2E$ per year)
- Results in 250 tons per year reduction in VOC emissions

Mineral Extraction

- Recycling materials to manufacture new products results in reduced extraction of virgin materials
- Benefits of reduced extraction:
  - Reduced groundwater pollution
  - Reduced sedimentation
  - Reduced acid mine drainage
  - Reduced heavy metals

Composting

- Potential increase in composting by 2 MT/yr
- Expand existing facilities; site new facilities
- VOC emissions increase projected
  - Tonnages from scenario 4
  - Emission factors based on available studies (4-7 lbs VOC/ton wet feedstock for green and 9-16 lbs VOC/ton wet feedstock for food)
  - 2-4 tons VOCs per day for green waste and 13-23 tons VOCs per day for food waste
- Water quality issues

Benefits of Compost Use

- Potential Increase in Compost Use
  - Increase in water holding capacity from compost use could result in water savings of 190-710 million gallons (580-2,200 acre-feet)
  - Improve water quality
  - Improve soil quality and carbon sequestration
  - Provide macronutrient benefit of 4-13 kg nitrogen/ton, 1-15 kg phosphorus/ton, and 3-12 kg potassium/ton
  - Reduce petrochemical fertilizer use
  - Reduce herbicide use

Transportation

- An avg. of about 10 additional vehicle trips per day per facility for collection
- Approx. 2-3 additional trips for MRF-to-Market
- Additional mileage of about 38,500 miles/day
- Reduced transportation associated with collection of solid waste
- Increased transportation associated with collection of compost feedstock, recyclables, and C&D

Environmental Justice

- Assessment Methodology
  - Use six EJ neighborhoods for assessment:
    - Wilmington, Pacoima, West Oakland, Barrio Logan, Arvin, and Fresno
  - Estimate the number of transfer facilities and operations in these neighborhoods
  - Estimate the number of additional trips to or from these facilities and operations

Environmental Justice

- Preliminary Results
  - No facility found in Barrio Logan and Arvin
  - Small transfer operation (<15 tons per day) found in Wilmington, Pacoima, and West Oakland
  - Multiple facilities in Fresno area
- Impacts
  - About 1 additional trip every 2 days maximum at full implementation for small transfer operations
  - About 3 trips per day at full implementation for a large vol. transfer facility (100 tons or more/day) in Fresno

Next Steps

- October 8th deadline for comments on HF&H Draft Report
- Post HF&H Final Report & distribute revised proposed regulation - December 2010
- Informal stakeholder workshop - January 2011
- Formal rulemaking begins – late January
- Air Resources Board Hearing - Spring 2011

Open Discussion & Questions